

March 24, 2006

Mr. Raymond Talkington
Geosphere Environmental Management, Inc.
51 Portsmouth Ave.
Exeter, NH 03833

**RE: Well Siting Approval/Large Groundwater Withdrawal Permit LGWP-2006-0001
Hooksett Village Water Precinct, PWS ID 1181020
East Well at Pinnacle Pond
Hooksett, New Hampshire**

Dear Mr. Talkington:

The New Hampshire Department of Environmental Services (DES) has conditionally issued the following: 1) approval of a new community water supply source; and 2) a large groundwater withdrawal permit. This new source is a gravel-packed well, designated East Well, for the Hooksett Village Water Precinct (HVWP) at the Pinnacle Pond site in Hooksett, New Hampshire. The requested production volume for the East Well is 576,000 gallons per day (gpd). The East Well is in addition to three active production wells at the Pinnacle Pond site, designated GPW 1 or North Well (Source ID 003), GPW 2 or South Well (Source ID 004), and GPW 3 or Back-up Well (Source ID 006). This approval means that information submitted to DES regarding the development of East Well meets the requirements of New Hampshire Administrative Rules Env-Ws 379, *Site Selection of Large Production Wells for Community Water Systems* and New Hampshire Administrative Rules Env-Ws 388, *Major Groundwater Withdrawal*. The large groundwater withdrawal permit for East Well is an attachment to this letter. Also attached to this letter is a summary of the project and DES' review of the application.

CONDITIONAL APPROVAL

This decision to conditionally approve East Well is based on information contained in the following documents:

- 1) Report titled "Preliminary Hydrogeological Report and Major Withdrawal Permit Application, East Well at Pinnacle Pond, Hooksett, New Hampshire", (Preliminary Report), prepared for HVWP by Geosphere Environmental Management, Inc., (Geosphere) dated November 30, 2004.

- 2) Letter to Ray Talkington of Geosphere from Tim Nowack of DES dated January 31, 2005. The letter contains a list of comments from DES based on its review of the Preliminary Report.
- 3) Letter to Tim Nowack of DES from Ray Talkington of Geosphere dated April 6, 2005. The letter contains responses to DES Preliminary Report review comments dated January 31, 2005.
- 4) Report titled "Final Hydrogeological Report and Major Withdrawal Permit Application, East Well at Pinnacle Pond, Hooksett, New Hampshire", (Final Report), prepared for HVWP by Geosphere dated August 3, 2005.
- 5) Letter to Ray Talkington of Geosphere from Tim Nowack of DES dated September 26, 2005. The letter contains a list of comments from DES based on its review of the Final Report.
- 6) Letter report to Tim Nowack of DES from Ray Talkington of Geosphere dated December 6, 2005. The letter report contains responses to DES Final Report review comments dated September 26, 2005.
- 7) Telephone conversation between Tim Nowack of DES and Ray Talkington of Geosphere dated January 30, 2006. The telephone conversation included supplemental DES comments concerning the operation of the diversion from Brickyard Brook to Pinnacle Pond.
- 8) Memorandum titled "Operation of Brickyard Brook Pipeline" to Tim Nowack of DES from Ray Talkington of Geosphere dated February 6, 2006. The memorandum contains responses to DES supplemental comments provided by telephone on January 30, 2006.
- 9) Letter to Ray Talkington of Geosphere from Stephen Roy of DES dated March 7, 2006. The letter contains a summary of DES' understanding of the Brickyard Brook diversion operation and diversion monitoring requirements.
- 10) Letter titled "Monitoring Plan" to Stephen Roy of DES from David Niemeyer and Ray Talkington of Geosphere dated March 13, 2006. The letter contains Geosphere's response to DES diversion monitoring requirements dated March 7, 2006.

The following requirements are associated with the approval of the East Well for use as a community water supply and **must be addressed as specified under each condition below:**

- 1) Provide to DES water quality analysis results indicating the absence of bacteria prior to connecting East Well to the HVWP water distribution system. Water quality analysis must be performed in accordance with Env-Ws 379.12 (e). Analyses shall be performed by a laboratory, which is certified in accordance with Env-C 300, and all analyses shall be performed in accordance with Env-C 300 as required by Env-Ws 379.12(g).

- 2) Implement water conservation in accordance with Env-Ws 390.05.
 - a. Notify DES that a water conservation outreach initiative has been completed by HVWP within 60 days from the date of this letter.
 - b. Notify DES that a water audit, leak detection and leak repair program has been implemented by HVWP within one year from the date of this letter.
 - c. Notify DES that an estimate of the volume and percentage of unaccounted-for water has been conducted by HVWP within one year from the date of this letter.
 - d. Notify DES that a rate structure promoting water conservation has been adopted by HVWP within five years from the date of this letter.
- 3) HVWP must maintain the wellhead protection requirements for the East Well wellhead protection area (WHPA) as required by Env-Ws 379.20. Please note that the WHPA delineated for the East Well is the same WHPA for the three other active production wells at the Pinnacle Pond site, designated North Well (Source ID 003), South Well (Source ID 004), and Back-up Well (Source ID 006). Therefore maintaining wellhead protection requirements for the East Well also satisfies wellhead protection requirements for the other three active wells. Wellhead protection requirements for the East Well specifies that HVWP complete the following at least once every three years:
 - a. Update the inventory of contamination sources and potential contamination sources as required by Env-Ws 379.20(a)(1).
 - b. Complete written notification requirements to each owner of contamination sources or potential contamination sources specified by Env-Ws 379.20(a)(2) once every three years starting 6 months after East Well startup.
 - c. Attempt a potential contamination source (PCS) survey at least once every 3 years, starting 6 months after East Well startup, of all PCSs to assess compliance with best management practices (BMP) as described by Env-Ws 421 in accordance with Env-Ws 379.20(a)(3). DES can assist HVWP by training its employees on how to complete the required BMP inspections. Please contact Diana Morgan of DES at 271-2947 for further information on BMP training.
 - d. Interstate 93 catch basins were identified as a PCS. An assessment of the good working condition of the catch basins that drain within the East Well WHPA must be included in the PCS survey described in condition 3)c above.
 - e. A review of DES geographic information system (GIS) data including 1998 orthophotoquads indicate that excavation activities conducted by Pike Industries has occurred in the WHPA. The PCS survey described in condition 3)c above must include an evaluation of excavation activities within the WHPA including an assessment that compares these activities with BMPs for Fueling and Maintenance of Excavation and Earthmoving Equipment located at <http://www.des.state.nh.us/factsheets/ws/ws-22-6.htm>.
- 4) Implement and adhere to the conditions of Large Groundwater Withdrawal Permit No. LGWP-2006-0001, which is attached to this document.

It is recommended that the water system take advantage of Phase II and V Source Protection Sampling Waivers. The sampling waiver program can save HVWP up to several hundred dollars

per sampling location per year in sampling costs and will satisfy East Well wellhead protection program requirements. Additional information about the sampling waiver program is located at <http://www.des.state.nh.us/factsheets/ws/ws-12-4.htm>. You may also contact Johnna McKenna at DES at 271-7017 to obtain more information about this program.

Please note that the connection of the well to the water system and treatment facilities must comply with the requirements of Env-Ws 374, *Design Standards For Large Public Water Systems*. Prior to connecting the well to the water system, provide a schematic describing chemical monitoring program sampling location(s), and the connection of the well to a meter vault, disinfection system, and the water system. A detailed description and schematic of the treatment system including the storage of chemicals, feed equipment, motor controls, and instrumentation must also be provided. Please forward this information to the attention of Bob Mann at DES at 271-2953.

SOURCE SPECIFICATIONS

The following Table 1 summarizes specifications for a new gravel-pack production well, designated East Well, for HVWP at the Pinnacle Pond site in Hooksett, New Hampshire as shown on the attached Figure 2 - Site Plan.

The Permitted Production Volume (PPV) is the maximum volume that may be pumped in any 24-hour period. The Sanitary Protective Area (SPA) is a circle, centered on the well, with the radius listed in Table 1. The WHPA delineated for the East Well is the same WHPA for the three other active production wells at the Pinnacle Pond site, designated North Well (Source ID 003), South Well (Source ID 004), and Back-up Well (Source ID 006) as shown on Figure 7 - Conceptual Hydrogeologic Model.

Table 1

Source Name	Well Status	Permitted Production Volume	Sanitary Protective Area Radius	Wellhead Protection Area	Source Description
East Well	New Well	576,000 gallons over any 24-hour period	400 Feet	As shown on Figure 7	East Well is located approximately 900 feet N of South Well Pump Station

CHEMICAL MONITORING PROGRAM

Results of the water quality sampling program, conducted as part of the well siting approval, indicate that each parameter, with the exception of pH, was below applicable Maximum Contaminant Level and Secondary Maximum Contaminant Level. Results indicate pH in the range of 5.7 - 5.8. Results of the water quality sampling program will be forwarded to Allyson Gourley of the DES Water Supply Engineering Chemical Monitoring Program. The laboratory name, sample collection identification number, date sampled, and laboratory sample identification number are listed in the following Table 2. Allyson will be contacting you shortly with a master sampling schedule. A sampling tap must be available for East Well, and, if you intend to blend the new source with the existing source(s) you must contact Allyson so that the schedule will accurately reflect the correct sampling location.

If you have any questions about the Chemical Monitoring requirements, contact Allyson Gourley directly at **271-0655** or by email at agourley@des.state.nh.us.

Please note that DES may initiate enforcement action if the system fails to implement a Chemical Monitoring Program at start-up.

Table 2

Source Name	Well Status	Laboratory Name, Sample Collection ID, Date Sampled: and Lab Sample ID
East Well	New Well	Eastern Analytical, East Well-1, 4/14/05: 47596.01
East Well	New Well	Eastern Analytical, East Well-2, 4/17/05: 47607.01
East Well	New Well	Eastern Analytical, East Well-3, 4/20/05: 47696.01
East Well	New Well	Seacoast Analytical, East Well-3, 4/20/05: East Well-3
East Well	New Well	Chemserve, East Well-3, 4/20/05: 05040204-01
East Well	New Well	KNL, East Well-3, 4/20/05: 3064
East Well	New Well	NHDES Lab., East Well-3, 4/20/05: A89013-1

If you have any questions about this letter or any other groundwater permitting issues, please contact me at 271-8866 or tnowack@des.state.nh.us.

Sincerely,

Timothy L. Nowack, PG
Hydrogeologist
Water Supply Engineering Bureau

Attachments: Large Groundwater Withdrawal Permit No. LGWP-2006-0001
Project Summary
Figure 2 - Site Plan
Figure 7 - Conceptual Hydrogeologic Model

cc: Roger Hebert, Hooksett Village Water Precinct
Stephen Roy, DES
Bob Mann, DES
Pierce Rigrod, DES
Linda Thompson, DES
George Hastings, DES
Allyson Gourley, DES
Deb McDonnell, DES

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The
NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
hereby issues

LARGE GROUNDWATER WITHDRAWAL PERMIT

NO. LGWP-2006-0001

to the permittee

HOOKSETT VILLAGE WATER PRECINCT (HVWP)
7 RIVERSIDE DRIVE
HOOKSETT, NH 03106
(603) 485-3392

for the withdrawal of the following volumes of groundwater from well:

EAST WELL - 576,000 gallons over any 24-hour period

located at the Pinnacle Pond site in Hooksett, New Hampshire (Tax Map 7, Lot 10)

Date of Issuance: March 24, 2006
Date of Expiration: March 24, 2016

Pursuant to authority in N.H. RSA 485-C:21, the New Hampshire Department of Environmental Services (Department), hereby grants this permit to Hooksett Village Water Precinct (HVWP) to withdraw groundwater from East Well, subject to the following conditions:

1. Application of Env-Ws 388 - The permittee shall continue to comply with the requirements of Env-Ws 388 at all times.
2. Inspections - Pursuant to RSA 485-C:15, the permittee shall allow any authorized member of the Department's staff, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting water level measurements, or undertaking other action associated with this permit.
3. Monitoring and Reporting - The permittee shall conduct a water flow rate and water level monitoring program according to paragraphs a.-c. below and as described in the Department letter containing monitoring requirements dated March 7, 2006 and a letter titled "Monitoring Plan", by Geosphere Environmental Management, Inc., dated March 13, 2006. A summary of all monitoring data shall be prepared in a hard copy format and submitted in an annual report to the Department by January 31 of each year, commencing January 31, 2007. The annual report shall include data for the preceding year ending on December 31. The annual report shall include a tabulated and graphed electronic spreadsheet submitted in a format approved by the Department. The annual report shall include an assessment of the potential impacts associated with the withdrawal including trends and variability. The permittee shall note any relevant observations that may affect water flow rate or water level measurements. The annual report shall include all field notes documenting monitoring activities for the preceding year. All field notes shall be signed and dated by the personnel responsible for collecting measurements. All water level measurements shall be made to the nearest 0.01 foot increment by a person who can demonstrate by education or experience, competency in collecting hydrogeologic measurements. This requirement shall apply to the following locations:
 - a. Protecting Minimum Flows in Brickyard Brook - The permittee shall install a gauge and calibrate the gauge to monitor flow in Brickyard Brook at the box culvert located beneath Route 3A. The purpose of the monitoring will be to ensure that water is not diverted from Brickyard Brook when flow is below the seasonal Q60, or when the diversion would result in flow below the seasonal Q60. The seasonal Q60 streamflows are provided on the table below. The permittee shall maintain records of all gauge maintenance and calibration activities and submit this information to the Department in the annual report.

Season	Q60 streamflow (cubic feet per second)
Winter (January 1 to March 15)	1.55
Spring (March 16 to May 31)	5.9
Summer (June 1 to October 31)	0.25
Fall (November 1 to December 31)	2.28

- b. **Brickyard Brook Diversion Tracking** - The permittee shall install a flow meter at the diversion pipe downstream of the gate valve to monitor the volume of water diverted from Brickyard Brook to Pinnacle Pond. A log book shall be used to record the dates, times, and flow meter readings in gallons each time the gate valve is opened and closed, at a minimum. The permittee shall provide the Department with a certificate of flow meter calibration, meter performance specifications, and meter maintenance and calibration requirements as prepared by the manufacturer. Meters shall be maintained and calibrated according to the manufacturer's specifications. The permittee shall maintain records of all meter maintenance and calibration activities and submit this information to the Department in the annual report.
 - c. **Pinnacle Pond Water Level Management** - The permittee shall operate the diversion pipe such that the resultant water level in Pinnacle Pond will not fall below the discharge end of the diversion pipe at Pinnacle Pond provided that the seasonal Q60 minimum flow is maintained at the proposed Brickyard Brook gauging station before and after opening the diversion pipe gate valve (refer to item 3a). The permittee shall install a permanent, surveyed gauge in Pinnacle Pond to monitor pond water levels. The permittee will notify DES within seven days if the pond water level is below the discharge end of the diversion pipe and the diversion cannot be used because the flow in Brickyard Brook is below the seasonal Q60 minimum flow or the Q60 minimum flow cannot be maintained with the diversion operating.
4. **Mitigation Requirements** - In the event that adverse impacts occur, the permittee shall comply with the requirements of Env-Ws 388:19.
5. **Registered Water User** - The permittee shall become a Registered Water User and maintain the water use reporting requirements of RSA 488 at all times. The permittee shall provide registration information for the South Backup Well and Brickyard Brook diversion to the New Hampshire Geological Survey.
6. **Permit Renewal** - The permittee shall apply for renewal of this permit at least 90 days prior to its expiration date. The permittee shall continue to comply with all conditions in this permit until the permit is renewed or the facility is closed in accordance with all applicable requirements, regardless of whether a renewal application is filed.

Any person aggrieved by any terms or conditions of this permit may appeal in accordance with RSA 21-O: 7, IV within 30 days.

Harry T. Stewart, P.E.,
Director Water Division